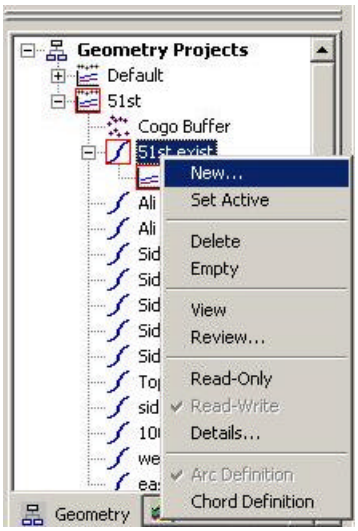
Creating Superelevations

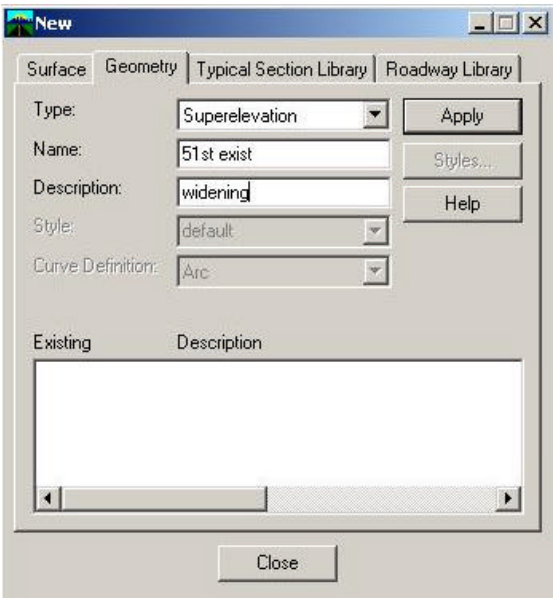
With the template and roadway libraries complete, we can now create the superelevation alignment. The method used in SelectCAD is not different from InRoads 7.01, but it has become easier to obtain the same results with less work.

1) Start with changing the explorer to show **Geometry**, and right click on the existing horizontal alignment.



2) Select **New…** from the pop-up menu.

*? The **New** dialog box appears.*

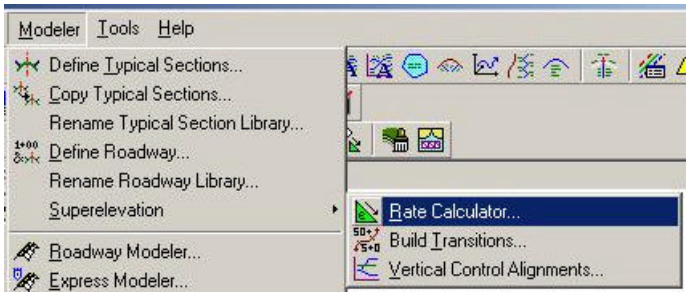


3) Select the **Geometry** tab and enter **51st exist** for the **Name** and **widening** for the **Description**.

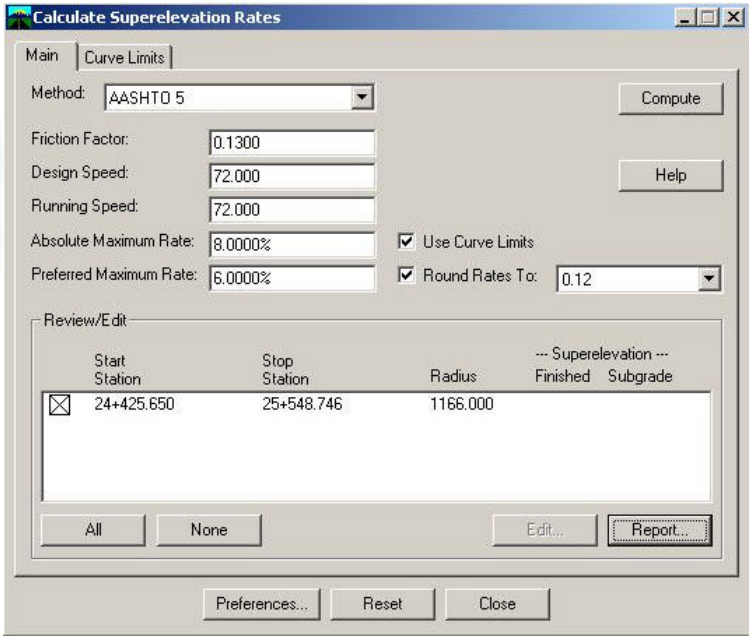
4) Click on **Apply** to create the superelevation alignment followed by **Close** to exit the dialog box.

5) From the SelectCAD menu, select **Modeler>Superelevation>Rate Calculator…**

*? The **Rate Calculator** dialog box appears.*



6) Verify the **Method** is set to **AASHTO 5** and set the **Design Speed** and **Running Speed** to **72.000**.

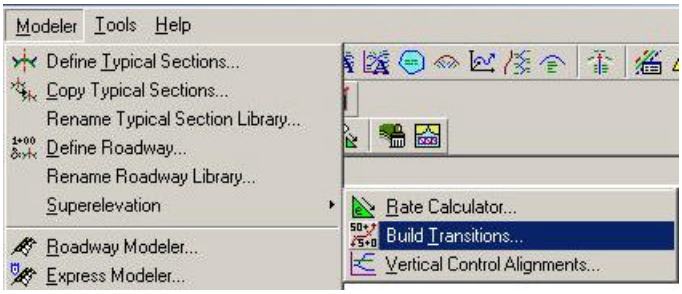


7) Change the **Absolute Maximum Rate** to **8.000%,** and the **Preferred Maximum Rate** to **6.000%.**

8) Check **Round Rates To**, change the value to **0.12**, and check the curve in the **Review/Edit** area.

9) Click on **Compute**, followed by **Close**.

10) Select **Modeler>Superelevation>Build Transitions…**

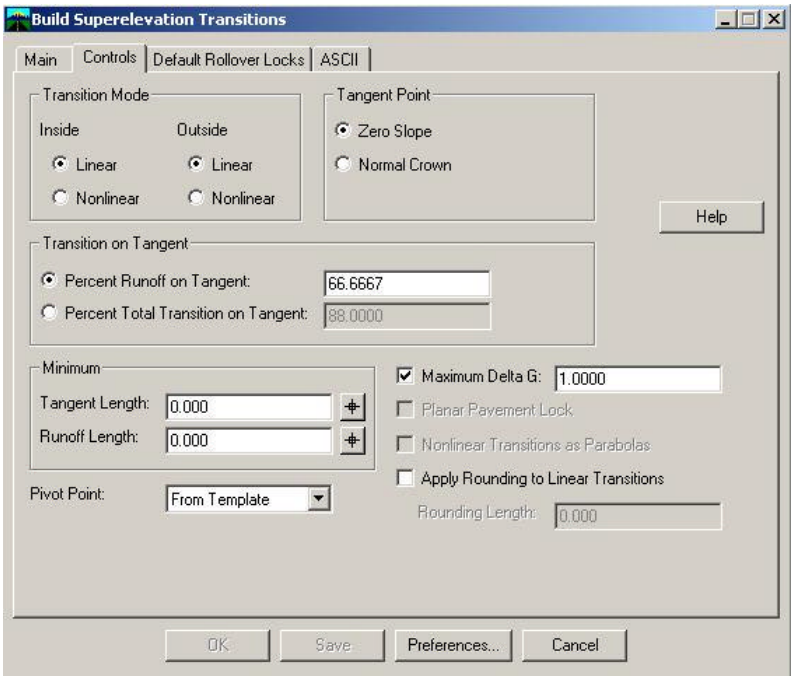


? *The **Build Superelevation Transitions** dialog box appears.*

11) Select the **Controls** tab.

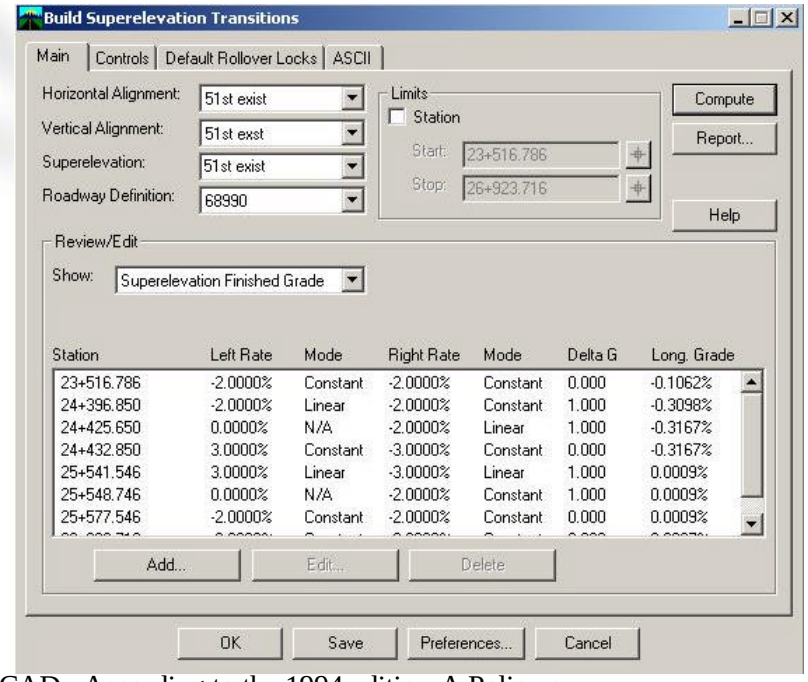
12) Verify the **Inside** and **Outside Transition Modes** are set to **Linear**, and the **Transition on Tangent** is checked as **Percent Runoff on Tangent** and the value is **66.6667**.

13) Select the **Main** tab.



14) Verify all alignments reflect the existing alignment, and the **Roadway Definition** is **68990**.

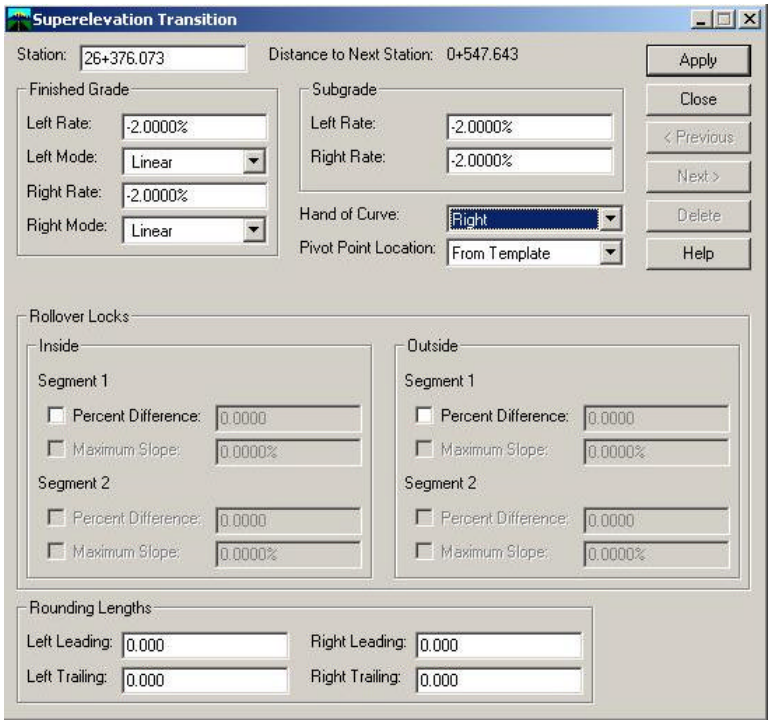
- It is not necessary to set Station limits, SelectCAD will automatically compute the transitions for the entire job.



15) Click on **Compute**.

> *? The **Stations/Transitions** will be displayed in the **Review/Edit** area.*

- It is important to verify all calculations derived by SelectCAD. According to the 1994 edition A Policy on Geometric Design of Highways and Streets, the maximum rate for a curve of 1000 meters is 2.6% (page 168). SelectCAD has computed 3.0% which is more than adequate, so we shall leave the values as they were computed. We shall, however, change the superelevation rates through the intersection. The current superelevation is –1.0% for right and left. We shall run the transition using the same stationing as the 7.2 to 3.6 taper.



16) Click on **Add** in the **Review/Edit** area.

> *? The **Superelevation Transition** dialog box appears.*

17) Enter the station **26+376.073**.

18) Enter **–2.000%** for both **Left** and **Right Rates**, and change the **Mode** to **Linear** for both.

19) Enter **–2.000%** for the **Left** and **Right Subgrade** values also.

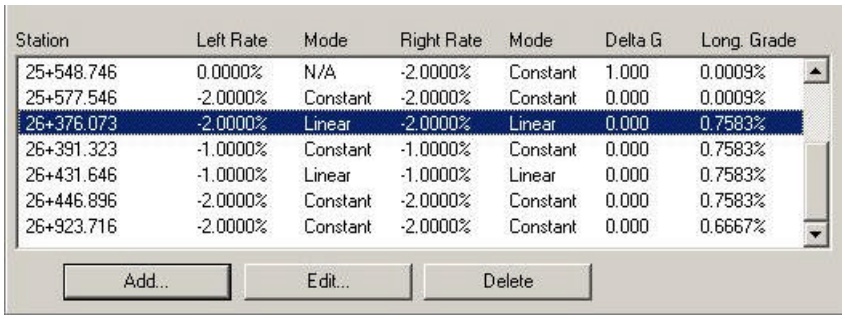
20) Click on **Apply** to create the station transition.

21) Enter the following stations:

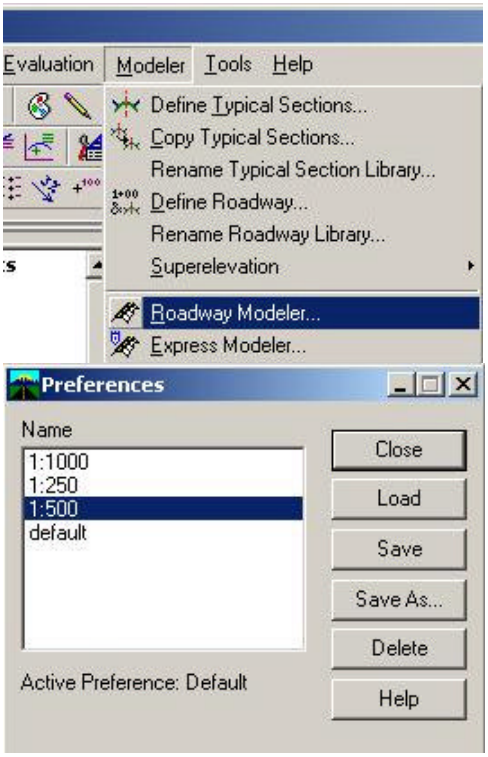
Station	Left & Right Rates	Mode	Subgrade Rates
26+391.323	-1.000%	Constant	-1.000%
26+431.646	-1.000%	Linear	-1.000%
26+446.896	-2.000%	Constant	-2.000%

22) Click on **Close** to exit the dialog box, and **Save** on the **Build Superelevation Transitions** dialog box, followed by **OK**.

- To the right are the entered transitions.



23) From the SelectCAD menu, select **Modeler>Roadway Modeler**.

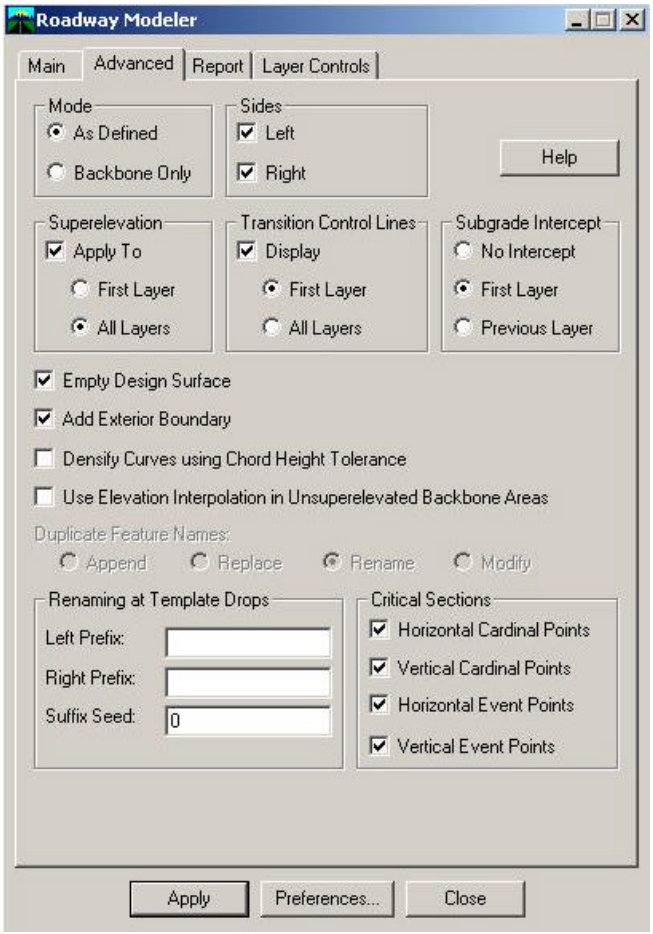


? *The **Roadway Modeler** dialog box appears.*

24) Click on **Preferences** at the bottom of the dialog box.

? *The **Preferences** dialog box appears.*

25) Either double-click on **1:500** or highlight **1:500** and click on **Load**.



26) Click on **Close** to exit the dialog box and return to the **Roadway Modeler** dialog box.

27) Select the **Advanced** tab.

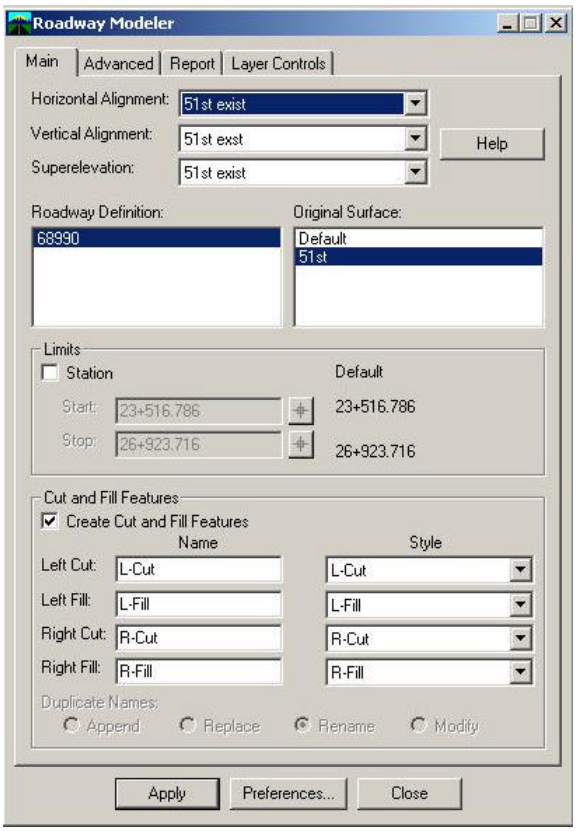
28) Verify the following: **Mode** set to **As Defined** and **Sides** has both **Left** and **Right** toggled. Also verify that **Apply To** & **All Layers** are checked under **Superelevation**, **Transition Control Lines** are to be displayed and only for the **First Layer**. The **Subgrade Intercept** is also set to **First Layer**.

29) Select the **Main** tab.

30) Verify that the **Horizontal**, **Vertical**, and **Superelevation** all reflect the existing alignment.

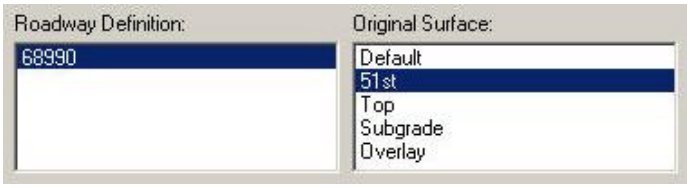
31) Highlight **68990** in the **Roadway Definition**, and **51st** in the **Original Surface**.

32) Verify that the **Create Cut and Fill Features** is toggled on, and click **Apply**.



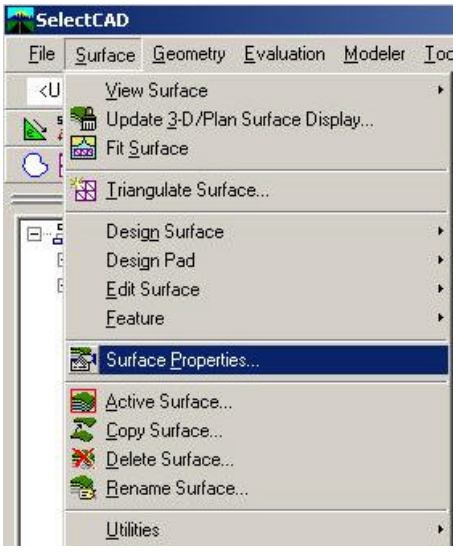
? SelectCAD will now run the model and display the T.C. lines and the cut and fill lines.

- When the model is complete, the three surfaces created will show up in the **Original Surface** window.



33) From the SelectCAD menu, select **Surface>Surface Properties…**

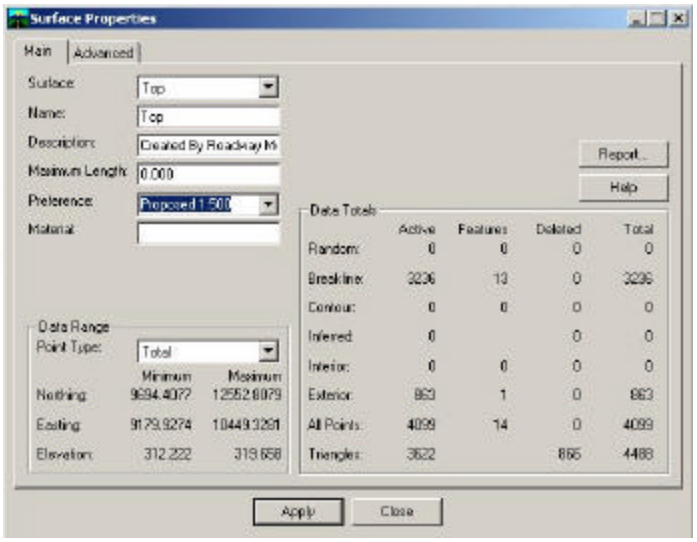
- While it is not possible to make changes to the templates to reflect the symbology of the surfaces to be created, we can change the properties of the surface once it is created.



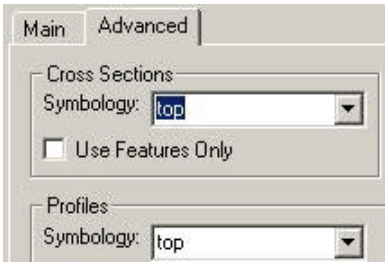
34) Under the **Main** tab, select the surface **Top**.

35) Change the **Preference** to **Proposed 1:500**, and select the **Advanced** tab.

36) Change the **Symbology** for both the **Cross Sections** and **Profiles** to **top**.



¦ It is possible that the symbology is already set to the desired values. The only issue in this situation is that the symbology is created by SelectCAD without any values. If the user changes the symbology properties, the values do exist and will be reflected in the cross sections and profiles.



37) Click on **Apply**, and return to the **Main** tab.

38) Repeat the process for **Overlay**, and **Subgrade**.

39) Close the **Surface Properties** dialog box.